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Two new willows from the Canadian Rocky Mountains*

WILLARD WINFIELD ROWLEE

During the summer of 1899, Mr. W. C. McCalla spent several months exploring and collecting in the vicinity of Banff, Alberta. At the writer's suggestion he made a special effort to secure a set of willows of the region, in which the stages of development would be shown. Usually collectors have too little time at their disposal to label or otherwise mark individuals in the field and then to go over the ground a second or third time and supplement their first collection, a method very essential in making specimens of *Salix*. Mr. McCalla not only did this but was also well equipped by natural aptitude and previous study to carry on a thorough investigation of the flora. The result of his work was an admirable and valuable set of plants from a region heretofore imperfectly known. Mr. Ball has already recognized, among McCalla's willows, specimens representing his new species, *Salix wyomingensis*. Two other specimens appear to represent new species of *Salix*.

Salix albertana sp. nov.

Low stout shrub ; shoots of current and preceding year dark-brown, covered with sparse cobweb-like pubescence, roughened by the leaf-scars and the more or less persistent scales ; buds small, brown ; leaves broadly elliptic-lanceolate, tapering equally to both ends, minutely glandular-serrulate or entire, clothed both sides with dense appressed silky tomentum when young, becoming less so with age, markedly opaque, petiole stout, 0.5–0.75 cm. long, blade 6–7 cm. long, the broadest 2.5 cm. wide, midrib and primaries prominent, ultimate veins distinctly reticulate ; stipules large, the largest 0.75 cm. long, and 0.5 cm. wide, obscurely glandular denticulate, semi-persistent ; aments large, sessile, terminal, usually in pairs, appearing before the leaves, silky and densely flowered ; pistillate cylindrical, 5–6 cm. long, 1.5 cm. thick, remaining dense at maturity ; scale black, nearly equaling the ovary at anthesis, elliptic, obtuse, clothed on the back and margins with long silky hairs ; capsule lanceolate, silky-pubescent, sessile, tapering into the long

* Contribution No. 122 from the Botanical Department of Cornell University.

(2 mm.) style which is deeply divided, each division bifid; gland large; stamens 2, filaments glabrous.

The type of this species is Mr. McCalla's 2251, collected in Alberta, British Columbia, on the "higher mountain slopes in rather wet ground (alt. 6500-7800 ft.), June 30, July 18, and August 30, 1899." Our specimens still retain the balsamic odor which in the fresh plant was as "strong as that of Balm of Gilead, and much like it."

It is quite probable that our species is *S. Barrattiana* var. *angustifolia* Anders. in DC. Prodr. 16²: 247. In floral characters it is much like *S. Barrattiana* Hooker, as understood by Mr. Bebb and subsequent students, but differs fundamentally in form and vesture of the leaf. One (both are marked "B") of the two pistillate leafy twigs represented in Hooker's plate of *S. Barrattiana* seems to have been based on this shrub. The other pistillate leafy twig, the details of leaf and floral structure, and the description, apply to *S. Barrattiana*, which has "leaves cordate at the base."

Present knowledge would therefore indicate that three species may be recognized in connection with the *Barrattiana* group: *S. Barrattiana* Hooker and *S. Tweedyi* (Bebb) Ball, both of which have leaves thin and green and cordate at the base, but differ in that the former has leaves and capsules with a conspicuous silky vesture; *S. albertana* has thick opaque leaves, acute at the base and apex and agrees with *S. Barrattiana* in vesture. All three have styles and stigmas which are characteristic and all have the same peculiar glands on the margins of the stipules and leaf-blades.

***Salix Maccalliana* sp. nov.**

Shrub 1-2 meters high. Young shoots and leaves minutely puberulent, soon becoming glabrous throughout; bark upon older branches dark-brown; buds yellow, rather large, flattened, pointed; leaves elliptic-lanceolate, 6-7 cm. long, 1.5 cm. wide, tapering equally to both ends, green and glabrous on both sides at maturity, finely but distinctly serrate, the serrations terminating in a characteristic callus, petioles 0.5-0.75 cm. long, the petiole, midrib and primary veins light-yellowish and in strong contrast to the green of the rest of the leaf which is obscurely reticulately veiny both sides; stipules none; aments borne on short leafy peduncles, the axis and the upper part of the peduncle hoary-canescens; flowers densely aggregated in the ament at anthesis, the pistillate

becoming more lax as the capsules mature; scale membranous and green at first, becoming tawny, with 3 or 4 prominent parallel veins, oblong, more than twice the length of the pedicel, rounded at the apex, crisp-hairy on the back; capsule large, prominently rostrate, clothed with short spreading silky hairs, about 8 mm. long at maturity, pedicel short (1 mm.), about twice the length of the yellow gland; style glabrous, 1 mm. long, surmounted by four stout stigmas; style and stigmas reddish-brown; stamens 2, filaments with a few spreading hairs at the base.

This beautiful shrub is obviously related to *Salix glaucops* Anders., but differs in having glabrous serrate leaves. Its leaves and buds suggest *S. lucida*.

McCalla 2252a (pistillate), *McCalla 2252* (staminate), type. Both collected in Alberta, British Columbia, at alt. 4500 feet, the former "at water's edge along road to Sun Dance Cañon, July 10, 1899"; the latter on "low ground along road to Devil's Head Lake, June 19 and August 19, 1899."